Management of Sows in Loose Housing Systems

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Factsheet

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Consumer interest continues to focus on where food comes from and how it is raised. The European Union has banned the use of sow confinement stalls by 2013, and Ohio has banned the use of new gestation stalls, effective July 2010, with existing stalls to be phased out over the next 15 years. Currently, Canada does not ban sow gestation stalls. However, societal pressure and packer requirements to supply niche markets are resulting in the move toward alternate forms of housing for sows. These factors will affect producers wishing to sell pork into the export market and become drivers of how pork is produced in Ontario.

The current direction in sow housing is moving away from the traditional gestation stalls and towards housing systems that allow the unlimited movement of individual animals. This change has led to unique management challenges when working with loose-penned animals. This trend has been in process on a number of Ontario commercial units for 15 or more years. Small production units, that never used gestation stalls, have also been operating this way.

HISTORICAL DEVELOPMENT OF SOW HOUSING

In the last 30 years, significant changes have occurred in swine production.

- Sow housing started as small groups of sows bedded with straw, but fed, watered and cleaned manually.
- An increase in herd size led to penning of 5–10 animals with floor feeding, liquid manure and no bedding.
- To deal with increased herd sizes, producers used mechanical feeding systems and water drinkers to deliver feed and water, and manure became liquid.
- Some producers mechanized straw-bedded systems with tractor scrapers, gates and mechanical delivery of feed and water.
- Aggressive competition among sows and stress, usually at weaning time, led to sows being restrained in stalls until after breeding.
- Producers moved to using individual sow stalls or crates, realizing the benefits to the sows, including individual feeding to nutritional needs, freedom from aggression, a reasonably clean environment, lower stress levels and enhanced management possibilities.

With the advances in management and care of individual animals, other areas of swine production also developed. Production units grew larger. Animal genetics, nutrition knowledge, ventilation, health care and husbandry practices developed and evolved.

In the late 1990s and early 2000s, Ontario producers sensitive to the needs of the marketplace began to look seriously at housing sows in groups.

TYPES OF GROUP OR LOOSE HOUSING

Typical group or loose housing uses slatted floors, no bedding and various methods of delivering feed, both liquid and dry, to a group of sows. Not all sows are suited to loose housing; sows that are excitable or overly active and sows that are overly docile both take more time and labour to move and work with in a loose housing system.

There are two methods of grouping sows — static and dynamic. In the static system, once a group of sows is assembled and penned together, no more animals are added. Animals that do not adapt are removed to stalls. The dynamic system is a group of sows with animals added and removed weekly. With both systems, sows are moved out to farrow over 1–2 weeks.

Producers with fewer than 700 sows would use the dynamic system, while those with more than 700 would use the static system to best utilize electronic sow feeders. Gilts must be housed and grouped separately from sows until after their first litter.

Ministry of Agriculture, Food and Rural Affairs

Ontario

ELECTRONIC SOW FEEDING (ESF) IN GROUP HOUSING

Electronic sow feeding (ESF) has been in existence for over 20 years and widely used in Europe. ESF works from an electronic identification in a sow's ear. When the sow enters the feeder, the tag is scanned, and the rear gate closes. A computer records sow activity, compressed air opens a trough door, and solenoids dispense feed and water in small portions until the sow stops eating or reaches her daily allotment. At that point, the trough door closes, and the sow exits, opening the rear gate for the next sow. The computer can be programmed to deliver two different types of feed on two different feed curves throughout gestation. Sows can eat at their leisure and return later for more. Animals not eating (sick, lame, lost tag) are identified on a daily print-out.[1]

Electronic sow feeding used in loose housing has been successful in Europe and can provide good sow welfare, with attention to detail. Production figures can equal or exceed those of stalled units. It is a labour-intensive system, relying on electronics and mechanicals that require protection against the environment. Adequate technical back-up and access to spare parts are necessary. Feeding equipment must function correctly and well. A big challenge with electronic sow feeding is ensuring that all animals are receiving adequate nutrition regularly. Some sows may not eat their full ration every day. The producer must adjust the computer program regularly to allow for differences in sow metabolism, activity level, behaviour or injury.

Things to consider when using electronic sow feeding:[1]

- Sows feed from ESF systems and live in stalls from weaning to 28 days pregnant, to ensure safe and secure implantation of the fertilized eggs within the uterus.
- Sows move to electronic feeding pens with 65–70 sows/pen, from 28 days to farrowing time.
- ESF systems use a straw-based manure system.
- Straw bedding provides increased animal comfort.
- Boars live in separate pens, and lame/sick sows live in hospital pen, removed from the group pens.
- Keeping sows in stalls allows the producer to give them individual attention and housing during the critical periods of post-weaning, post-breeding and early fetal development, as well as make pregnancy diagnoses before grouping.
- In a loose-housed system, the sows do not have food and water immediately in front of them as they would in a stalled system. Non-performing sows must be removed promptly to hospital pens to aid recovery.
- Sows kept in a static group tend to be less aggressive than sows kept in a dynamic group.
- Group sizes of 65–70 are the most efficient for ESF.
- Gilts of uniform size and activity level live together in pens until they are successfully bred with their second litter.
- It is best to group other animals as closely as possible by weight. This can be difficult when dealing with smaller numbers of sows. Failure to do this can lead to aggressive behaviour and timid animals.

Manure systems, from straw to total liquid with slatted floors, work well with ESF. If you are supplying roughage (hay, silage or straw), make sure it is provided in a form the manure system can handle.

After groups are assembled, checking for pregnancy or any treatments requiring medical intervention are best done with some form of confinement, such as an alley and squeeze, for effective administration and uniform treatment.

Sow identification is critical. Without the necessary identification, electronic sow feeders don't work. To maintain production records, individual animal identification must be maintained. Remember that re-tagging in a large pen can be a challenge.

A combination of stalls and group-housed pens provides a good housing environment because:

- Use of stalls allows producers to give sows individual attention and the housing needed during the critical periods of post-weaning, post-breeding and early fetal development.
- Only pregnant females are put into the group-housed pens.
- ESF systems allow individual feeding based on need.
- Straw gut fill may increase contentment and reduce aggression.
- Straw may increase gut capacity and help with lactation feed intake.
- The availability of hospital pens ensures sows are separated from the group quickly, since food and water are not immediately available as they would be in a stalled system.

Advantages

- Sows remain productive for longer, because they maintain their muscle tone. If well reared as gilts, sows live longer.
- Apart from aggression at entry to the group pen, there is little fighting.
- Sows on ESF can be individually fed according to condition and size. This requires additional time and attention to detail in the feeding program.
- There is minimal feed waste.
- Sows appear to be more docile and easily handled.
- Staff prefer working in a loose-housed environment.
- Output on ESF farms can be equal to or greater than stalled units.

Disadvantages

- Because there is a single, large lying area, sows can dung in the straw in the lying area.
- ESF systems require a higher level of attention to detail than stalled units. Producers must quickly identify a missing or broken ear transponder tag and seek out sows that are not entering the feeding area, or the sow will not be able to eat.
- ESF systems are more labour intensive (+20% in the breeding area in a straw-based system).
- The mechanisms of ESF are complex and require competency with computer software and electronics. Mechanical breakdowns are common.
- Wiring must be well protected from the environment, especially mice, in a straw-based system.
- At present, most ESF manufacturers are European, and while their products are reliable, finding dealers, service and parts can be challenging.
- There is a risk of compromising biosecurity with the use of straw bedding.
- Conversion from an existing conventional sow system to ESF is not as easy as conversion to some of the other systems because of the very different pen configuration that is required for ESF. Many producers have added ESF to new facilities.
- It takes time to train the sows to enter the feeder. Sows that cannot be trained must be culled or housed differently.
- The ESF unit is expensive to purchase.

FREE-ACCESS STALLS

As Europe moves toward the banning of gestation stalls, a new type of stall is being developed. Free-access stalls, used with slatted floor systems, are installed into typical, large-group ESF pens, allowing the sows to share a common area. If a sow wishes security, she can enter any empty stall at will and close the rear gate using body weight. To exit, she can open the stall by standing up and backing out. The stalls can also be locked manually for health and pregnancy checks. Over 20,000 of these stalls have been sold across Scandinavia and are scheduled to be in use in Europe by 2013.

Research on sows' use of free space in free-access stalls shows that not all sows used the free space areas regularly or for extended periods of time.[2] Older, heavier sows used the space the most. More research on reducing social stress on younger animals and making the free space more comfortable is needed.[2]

Industry has selected for larger pigs that can have difficulty lying and standing, and may not fit comfortably into conventional stalls.[2] Sows show a preference to lie down in areas with walls that can act as support. Marchant et al. (2001) reported that 89% of the time, sows lay down against either a sloping wall or a wall fitted with a piglet protection rail.[2]

MANAGEMENT IN GROUP HOUSING

Producers in Ontario who have managed sows in group housing have developed a number of techniques to reduce aggression in group pens. The following suggestions are listed in order from the easiest to the most difficult, based on labour/cost.[3]

- **Wean sows into breeding stalls.** Confirming pregnancy at 28 days is considered adequate before assembling groups.
- **Provide extra feed or a bag of shavings on the pen floor before sows enter.** The sows should have something to explore and enjoy as they realize their space is being shared with others. Feed at 1.5–2 times the daily ration for up to 3 days.
- **Add a boar to the pen.** The boar must be the right size and temperament, so he isn't beaten and does not beat the sows.
- **Mix the group at the end of the day, and turn out the lights.** Full, calm sows in a dark environment are less aggressive.
- **Select and group sows by size.** Ensure no one sow is too big (dominant) or too small (submissive).

- **Group sows into larger groups of over 20 to avoid a hierarchy.** Small groups of less than 10 allow hierarchies to start. In groups over 20, sows give up on a hierarchy.
- **Use partition walls (cement or hanging rubber mats) to provide hiding places for sows being pursued.** Fights will stop when one sow gets out of sight.
- **Spread the feed over the entire floor surface.** This allows more space between feeding sows and less sow-to-sow encounters.
- **Break up the total daily ration into smaller meals.** Provide multiple feedings 3–8 times per day.

Sow Area

In practice, the area per sow has varied from 1.4–2.8 m^2 (16–30 ft^2) per sow. A large feeding floor reduces competition for feed. However, too large a lying area leads to dunging on the solid floor. Common practice has been to allow 1.1–1.4 m^2 (12–15 ft^2) of feeding/lying floor. Floor-fed sows generally stay clean because of the floor feeding. Slope floors 5% towards slats to get urine to drain out quickly. Liquids puddling encourages dunging on solid floor. A 5-cm (2-in.) step down to the slatted area will help manure stay on slats.

FEEDING STALLS IN GROUP HOUSING

Gateless feeding stalls of both European and Ontario design are available. Sows enter these stalls to be fed individually; the person doing the feeding decides how much each sow is fed.

Advantages

- Use of these stalls reduces aggression significantly, since their design discourages a sow from trying to get another sow's feed.
- Sows are fed in groups (one sow per stall) by emptying the unit after a group has been fed, allowing another group to enter, and refilling the feeders.

Disadvantages

- All sows must eat at the same time.
- Feed portion control is not as accurate as it could be.
- Feeding stalls do not work as well with liquid feeding, since sows that eat faster get a greater proportion of the feed. Limit liquid feeding to a group size of four sows to ensure they get close to what their nutritional needs are.

MANURE MANAGEMENT

Slatted Floor Systems

Loose housing can use slatted floors or a straw-based system for manure management. Slat details are important for dry sows in pens. A slatted floor at least 2.4 m (8 ft) wide helps keep sows clean; any less and there will be some risk of manure on the solid floor. Ideal slot width is 2 cm (3/4 in.).

The slatted floor area at the end of the pen, next to the outside wall, is prone to manure build-up, because the manure does not get tramped down by the sows. A wider gap of 5 cm (2 in.) between the last slat and the wall will keep this area cleaner. Place the slat panels parallel to walls and support them on cross beams. Sows do not typically get caught in this wider gap.

Straw-Based Systems

Move manure out of the barn with a skid steer to an end pad and remove it from there with a tractor loader. Return straw in the reverse order, eliminating the need for outside equipment to enter the barn. The pit under the slats closest to the straw will require flushing every other day to keep it open. Scrapers may also work, but broken cables can pose problems. In the U.K., deep straw-based systems are common.

Non-Straw or Low-Straw ESF Systems in Europe

European Union legislation requires that straw or roughage be available to sows daily. European sow straw systems typically use a solid floor lying area and slatted dunging areas in insulated buildings; some locations have under-floor heat.

SUMMARY

The use of gestation stalls began in the 1970s to reduce the number of aggressive encounters between sows in group pens and individually feed unthrifty sows. It was considered an aid to a sow's biological functioning and well-being, although at the expense of a more natural existence. Consumer-driven changes to livestock production are moving towards management styles that allow animals more natural behaviour. Recently, producers have developed numerous new methods of feeding sows in groups and group pen designs that decrease competition for feed and, thus, aggressive encounters.

Almost all the people in pork production in Ontario today grew up in an industry that utilized gestation stalls, liquid manure and both mechanical and liquid methods of feed delivery. Their management skills

developed around the needs of the industry they worked in and they became outstanding at what they did.

The challenge for pork producers now is to rethink and redo the management practices used to develop the industry to this point in order to maintain a strong and productive industry. The person entrusted with the care of the animals must be able to pick out the at-risk animals from a group, separate them and take remedial actions. Production from group-housed sow units can equal production from confinement units, but excellent stockmanship skills are necessary to make the system work. The use of loose housing as a management system is not a replacement for individual sow management, care and attention to detail.

The features of the various styles of group housing will appeal to some producers more than others. Speaking with producers who are currently using group housing will provide great insight.

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*This author has two DVDs available, free of charge, on various loose sow housing systems currently in Ontario.

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